

AMENDMENTS TO THE SPECIFICATION:

Please amend the caption on page 5, line 5, as follows:

BRIEF SUMMARY OF THE INVENTION

Please amend the paragraph beginning at page 5, line 6, and continuing to page 5, line 10, as follows:

Therefore, it is an object of the present ~~invention~~
~~technology~~ to provide an apparatus for removing particles which
effectively eliminates particles in the vacuum container unit
without degrading the rate of operation of the processing
device, and is simple and inexpensive to embody.

Please amend the paragraph beginning at page 5, line 11, and continuing to page 5, line 23, as follows:

In order to achieve the above-described object, there is
provided an apparatus for removing particles for a processing
device including a vacuum container unit having a plurality of
chambers in which a predetermined process is performed on a
wafer carried in by a conveyer unit in atmosphere. The apparatus
~~in accordance with the present invention~~ comprises a charge
neutralizing means for neutralizing charges generated on the
surface of the wafer, the charge neutralizing means being
mounted in a waiting-accommodation unit which constitutes a part
of the conveyer unit, and a charging means for adsorbing
particles in the vacuum container unit by electrostatic force,
the charging means being mounted in the vacuum container unit.

Please amend the paragraph beginning at page 5, line 24, and continuing to page 6, line 20, as follows:

In accordance with the apparatus ~~of the present invention~~, charges generated on the wafer surface is neutralized by the charge neutralizing means in the waiting-accommodation unit which constitute a part of the conveyer unit. Therefore, when the wafers are conveyed into the vacuum container unit, adherence of particles existing in the vacuum container unit to the wafer surface by electrostatic force is effectively prevented. In addition, in the vacuum container unit, the particles existing in the vacuum container unit are adsorbed to the charging means by electrostatic force to effectively remove the particles floating in the vacuum container unit. Moreover, the neutralization of the wafer surface by the charge neutralizing means and adsorption of particles by the charging means are performed without contacting the wafers. This prevents the generation of any additional particles on the wafer surface. As a result, the number of particles floating in the vacuum container unit is maintained at low level. Therefore, the yield (ratio of source material to product) of the product using the wafer is also improved than a conventional art.

Please amend the paragraph beginning at page 6, line 21, and continuing to page 7, line 12, as follows:

In the apparatus for removing particles ~~in accordance with the present invention~~, the charge neutralizing means is mounted in the waiting-accommodation unit which constitutes a part of conveyer unit, i.e. under atmospheric pressure. On the other hand, since the charging means adsorbs the particle in the vacuum container unit by electrostatic force, the charging means can be embodied using a charged metal plate, for example, and

does not require any movable parts. Therefore, the apparatus for removing particles ~~in accordance with the present invention~~ can be embodied simply and inexpensively. As a result, the installation costs are low. Moreover, the apparatus for removing particles ~~in accordance with the present invention~~ does not consume materials such as cleaning gas for removing particles, resulting in less operating costs compared to a conventional apparatus.

Please amend the paragraph beginning at page 7, line 13, and continuing to page 8, line 1, as follows:

In addition, the neutralization of the wafer surface by the charge neutralizing means and adsorption of particles by the charging means can be performed while performing the inherent process of the processing device. Namely, the wafers are conveyed through the conveyer unit and the neutralization of the wafer surface and adsorption of particles can be performed while predetermined process is performed on the wafers conveyed through the conveyer unit in the vacuum container unit. Therefore, inherent process of the processing device does not need to be stopped for removing particles. As a result, ~~in accordance with an apparatus of the present invention~~, the rate of operation of the processing device does not degraded.

Please amend the paragraph beginning at page 9 line 16 and continuing to page 9, line 19, as follows:

Fig. 1 is a plan view schematically illustrating the constitution of a sputtering apparatus including an apparatus for removing particles ~~in accordance with one embodiment of the present invention;~~

Please amend the paragraph beginning at page 10 line 17, and continuing to page 10, line 20, as follows:

Fig. 1 is a plan view schematically illustrating the constitution of an example embodiment of a sputtering apparatus including an example apparatus for removing particles in accordance with an embodiment of the present invention.

Please amend the paragraph beginning at page 21, line 18, and continuing to page 22, line 3, as follows:

~~In accordance with the present invention,~~ Since particles in the pressure buffer unit 12 are constantly collected by the charging means, 'device wafer processing' does not require to be stopped for 'particle collection process'. In addition, the ionizer 114 of the waiting-accommodation unit 113 is maintained at neutralization mode for neutralizing surface charge of the device wafers so that the change of mode is not required. As a result, the processing capability (the rate of operation) of the device is substantially improved.

Please amend the paragraph beginning at page 22, line 5, and continuing to page 22, line 6, as follows:

The load lock chamber and the charging means of the apparatus for removing particles ~~according to the present invention~~ will be described in more detail.

Please amend the paragraph beginning at page 23, line 12, and continuing to page 23, line 18, as follows:

~~In accordance with the present invention,~~ Special operations are not required for 'particle collection process'. Since wafers for particle collection used in the conventional art are not required, cost for purchasing wafers for particle

collection and time and cost for managing the wafers for particle collection can be completely eliminated.

Please amend the paragraph beginning at page 23, line 19, and continuing to page 24, line 4, as follows:

In ~~the an example embodiment of the present invention~~, the internal plate electrodes 85B and 86B of the charging means 124 are illustrated as one plate (see Fig. 3), respectively. However, the internal plate electrodes 85B and 86B can be divided into multiple segments and the arrangements thereof do not have any restriction as long as they do not contact the device wafers. The polarity and amount of charges of the internal plate electrodes 85B and 86B of the charging means 124 may be determined depending on characteristics of the particles to be eliminated, etc.

Please amend the paragraph beginning at page 24, line 10, and continuing to page 24, line 19, as follows:

Moreover, in the ~~example embodiment of the present invention~~, the charging means 124 is mounted in the pressure buffer unit 12 of the vacuum container unit 10. However, the scope of the present invention is not limited to this. The charging means 124 can be mounted in the process chamber 13 instead of the pressure buffer unit 12 or both in the pressure buffer unit 12 and the process chamber 13. The number and arrangement of the charging means 124 does not have any special restriction as long as the charging means 124 does not contact the device wafers.

Please amend the paragraph beginning at page 24, line 20, and continuing to page 25, line 10, as follows:

In the ~~example embodiment~~, the apparatus for removing particles ~~of the present invention~~, which is applied to a sputtering apparatus, has been described. However, the apparatus for removing particles ~~of the present invention~~ can be applied to other processing device including a vacuum container unit, for example a pressure-reduced CVD apparatus, etching apparatus or ion injection apparatus and provides the same effect. The use of apparatus for removing particles ~~of the present invention~~ is not restricted to semiconductor integration circuit manufacturing process. The apparatus for removing particles can be applied to processing device including a vacuum container unit used in chemical compound semiconductor manufacturing process and LCD panel manufacturing process, and provides the same effect.

Please amend the paragraph beginning at page 25, line 11, and continuing to page 25, line 17, as follows:

As described above, in accordance with the apparatus for removing particles ~~of the present invention~~, the particles in the vacuum container unit can be eliminated effectively without a degrading the rate of operation of the processing device. In addition, the apparatus for removing particles ~~of the present invention~~ can be embodied simply and inexpensively.